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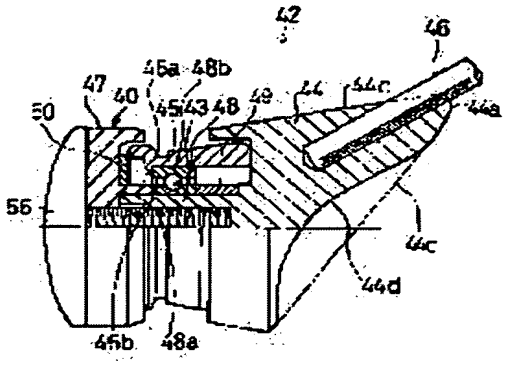
(54) FISHING LINE GUIDING DEVICE FOR SPINNING REEL

(57)Abstract:
PROBLEM TO BE SOLVED: To smoothly guide a fishing line to a line roller.
SOLUTION: The fishing line guiding mechanism 42 for a spining reel is for guiding the fishing line to a spool and is provided with a fixed axis 43, a fixed axis cover 44, the line roller 45 and a bail 46. One tip of the fixed axis 43 is fixed to a bail supporting member 40, and the cover 44 is arranged at the other tip of the axis 3 at an interval from the member 40. The line roller 45 is supported by the axis 43 to be freely rotatably and a guiding part guiding the fishing line is formed on a peripheral surface. Both tips of the bail part 46 are fixed to the member 41 and the cover 44 and arranged curving outward in the peripheral direction of the spool to guide the fishing line to the line roller 45 through the cover 44. The bail 46 and the cover 44 are constituted so as to reduce a distance between the line guiding side contact part of the line roller side part of these cover 44 and the bail 46 and a line contact part on the spool along with going toward the line roller 45 from the bail 46.



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* NOTICES *

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CLAIMS

[Claim(s)]
[Claim 1] It is the fishing line guide apparatus of a spinning reel for bail supporter material arranged free [rocking at the tip of one pair of Rota arms of Rota], respectively being equipped, and showing a fishing line to a spool. A fixed shaft with which an end was fixed to one side of said bail supporter material, and a fixed shaft guard prepared in the other end of said fixed shaft by separating one [said] bail supporter material and gap, The Rhine roller with which the interior of a proposal which is supported by said fixed shaft free [rotation] and shows a peripheral surface to said fishing line was formed, Both ends are fixed to another side and said fixed shaft guard of said bail supporter material. Curve to a method of the outside of a hoop direction of said spool, and it is arranged, and has a bail which leads said fishing line to said Rhine roller through said fixed shaft guard. So that it may become short as distance of said fixed shaft guard and the fishing line guidance side contact section for said Rhine roller flank of said bail, and the fishing line contact section on said spool faces to said Rhine roller from said bail A fishing line guide apparatus of a spinning reel with which said bail and a fixed shaft guard are constituted.
[Claim 2] It is the fishing line guide apparatus of a spinning reel according to claim 1 joined in the ridgeline section near [said] a cone point as smoothly [said fixed shaft guard is a cone configuration, and / an end of said bail] as said ridgeline section.
[Claim 3] Said cone point is a fishing line guide apparatus of a spinning reel according to claim 2 which is the back of a reel and has turned to a method of the outside of the direction of a path of said spool on the basis of said fixed axis.
[Claim 4] A joint of said bail and fixed shaft guard is a fishing line guide apparatus of a spinning reel according to claim 2 or 3 currently deflected from said cone point to a fishing line guidance side.
[Claim 5] A fishing line guide apparatus of a spinning reel given in either of claims 2-4 in which the deficit section dented in the ridgeline section by the side of the tension-thread-guard section of said fixed shaft guard and reverse is formed.
[Claim 6] A reduction rate of distance with the fishing line contact section on said spool of a portion which results from near the joint of said bail and fixed shaft guard to said Rhine roller is the fishing line guide apparatus of a spinning reel given in larger either of claims 1-5 than a reduction rate of the bail till then.
[Claim 7] Said fixed shaft guard and fixed shaft are the fishing line guide apparatus of a spinning reel given in either of claims 1-6 which is manufactured by cutting by one.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[The technical field to which invention belongs] This invention relates to the fishing line guide apparatus of the spinning reel for a fishing line guide apparatus and the bail supporter material arranged especially free [rocking at the tip of one pair of Rota arms of Rota], respectively being equipped, and showing a fishing line to a spool.
[0002]
[Description of the Prior Art] The fishing line guidance device in which it shows a fishing line to a spool is prepared in the spinning reel. The fishing line guidance device is established at the tip of one pair of bail supporter material which rotates with Rota and is rocked between a thread disconnection posture and a bobbin picking posture. This fishing line guidance device is equipped with the fixed shaft with which that end was fixed at the tip of one bail supporter material, the fixed shaft guard fixed to the other end of a fixed shaft, the bail with which the end was attached in the fixed shaft guard, and the Rhine roller. The other end of a bail is attached at the tip of another side of bail supporter material. The end of this bail bends and insertion immobilization is carried out at the side crowning of a fixed shaft guard. The Rhine roller is supported by the fixed shaft free [rotation] through bearing between a fixed shaft guard and bail supporter material.
[0003] In the spinning reel which has such a fishing line guidance device, in case a fishing line is rolled round to a spool, a bail is made to rock to a bobbin picking posture side, and a handle is turned. Then, a fishing line is guided to a bail, is guided through a fixed shaft guard at the peripheral face of the Rhine roller, and contacts. And it shows around at the Rhine roller, the direction of a fishing line is changed, and it is rolled round by the spool periphery.
[0004] It is important to show smoothly a fishing line to the Rhine roller by such fishing line guidance device. However, by said conventional fishing line guidance device, since a bail is bent by the end and inserted in the fixed shaft guard, a fishing line is caught in the bending portion and the insertion portion to a fixed shaft guard, and a fishing line may not be guided smoothly. This is considered to be because it to become long and for a fishing line to be caught in the fluctuation portion of the distance, after becoming short gradually as the distance from the fishing line contact section on a spool faces to the Rhine roller in a bending portion or an insertion portion. If a fishing line is caught and it does not show around smoothly in such a distance fluctuation portion, it will be easy to generate thread relation.
[0005] The technology of preventing this is indicated by JP,7-327559,A. This fishing line guidance device fixes the end of a bail at the tip of a before [the bail supporter material instead of a fixed shaft guard] side directly. Here, the edge of a bail is mostly bent by the right angle near the fixed shaft guard, it curves along the outside of a fixed shaft guard, extends ahead, is further bent in accordance with the shaft orientations of the Rhine roller there, and is being fixed at the tip of bail supporter material.
[0006]
[Problem(s) to be Solved by the Invention] By said conventional fishing line guidance device, since a fishing line is directly led to the Rhine roller with a bail, connection of the fishing line for the joint of a fixed shaft guard and a bail can be prevented. However, since the bail is mostly

bent by the right angle near the fixed shaft guard, when the process tolerance of a bending portion is bad, the distance from the fishing line contact section on a spool to the fishing line guidance side contact section of a bail becomes long gradually in a bending portion, and there is a possibility that a fishing line may be caught there and thread relation may arise.
[0007] The technical problem of this invention is to enable it to show smoothly a fishing line to the Rhine roller.
[0008]
[Means for Solving the Problem] A fishing line guide apparatus of a spinning reel concerning invention 1 is equipment for bail supporter material arranged free [rocking at the tip of one pair of Rota arms of Rota], respectively being equipped, and showing a fishing line to a spool, and is equipped with a fixed shaft, a fixed shaft guard, the Rhine roller, and a bail. As for a fixed shaft, an end is being fixed to one side of bail supporter material. A fixed shaft guard separates one bail supporter material and gap to the other end of a fixed shaft, and is prepared in it. The Rhine roller is supported by fixed shaft free [rotation], and the interior of a proposal which shows a peripheral surface to a fishing line is formed. Both ends are fixed to another side and a fixed shaft guard of bail supporter material, and a bail curves to a method of the outside of a hoop direction of a spool, is arranged, and leads a fishing line to the Rhine roller through a fixed shaft guard. A bail and a fixed shaft guard are constituted so that it may become short, as distance of this fixed shaft guard and the fishing line guidance side contact section for the Rhine roller flank of a bail, and the fishing line contact section on a spool faces to the Rhine roller from a bail.
[0009] In this fishing line guide apparatus, if a handle is rotated and a bail becomes a thread winding posture, a fishing line will contact a fishing line guidance side of a bail, and it will show around through a fixed shaft guard at the Rhine roller from a bail. And it shows around at the Rhine roller, the direction of a fishing line is changed, and it is rolled round by spool periphery. Since it is short as distance of a fixed shaft guard and the fishing line guidance side contact section for the Rhine roller flank of a bail, and the fishing line contact section on a spool faces to the Rhine roller from a bail during migration of a fishing line from this bail to a fixed shaft guard, the increase and decrease of fluctuation of distance with a spool are lost, and a fishing line stops being caught easily. For this reason, it can show smoothly a fishing line to the Rhine roller from a bail.
[0010] In equipment given in invention 1, a fixed shaft guard of a fishing line guide apparatus of a spinning reel concerning invention 2 is a cone configuration, and an end of a bail is smoothly joined to the ridgeline section near a cone point with the ridgeline section. In this case, since convex top-most vertices where a fishing line tends to be caught can be hidden with a bail and can be avoided, a fishing line is guided more smoothly at the Rhine roller.
[0011] In equipment given in invention 2, a cone point is the back of a reel on the basis of a fixed axis, and a fishing line guide apparatus of a spinning reel concerning invention 3 has turned to a method of the outside of the direction of a path of a spool. In this case, since top-most vertices have turned to the back and a method of outside, in a fixed shaft guard, a configuration which shortens distance with a spool gradually is easily realizable.
[0012] A fishing line guide apparatus of a spinning reel concerning invention 4 is deflecting a joint of a bail and a fixed shaft guard from a cone point to a fishing line guidance side in equipment invention 2 or given in 3. In this case, since a bail is deflected and joined to a tension-thread-guard section side, it is lost that top-most vertices project and a fishing line is guided more smoothly at a tension-thread-guard side.
[0013] The deficit section in which a fishing line guide apparatus of a spinning reel concerning invention 5 was dented in equipment given in either of the invention 2-4 in the ridgeline section by the side of the tension-thread-guard section of a fixed shaft guard and reverse is formed. In this case, it becomes possible only for a part of the deficit section to be able to attain lightweight-ization, and to maintain balance of Rota the optimal with magnitude of the deficit section. A reduction rate of distance with the fishing line contact section on a spool of a portion in which a fishing line guide apparatus of a spinning reel concerning invention 6 results [from near the joint of a bail and a fixed shaft guard] to the Rhine roller in equipment given in either of the invention 1-5 is larger than a reduction rate of the bail till then. In this case, since a

reduction rate becomes large there even if it is in a joint of a bail and a fixed shaft guard about a delicate level difference, with vigor, a fishing line jumps over that joint and is guided smoothly at the Rhine roller.
[0014] In equipment of a publication, a fixed shaft guard and a fixed shaft are manufactured for a fishing line guide apparatus of a spinning reel concerning invention 7 by cutting by one by either of the invention 1-6. In this case, the number of erectors and a processing man day of components decrease, and a manufacturing cost can be reduced.
[0015]
[Embodiment of the Invention]
[A whole configuration and configuration of the main part of a reel] In drawing 1 - drawing 3 , the spinning reel which adopted 1 operation gestalt of this invention is equipped with the main part 2 of a reel supported for a handle 1, enabling free rotation, Rota 3, and spool 4. Rota 3 is supported by the anterior part of the main part 2 of a reel free [rotation]. Spool 4 rolls round a fishing line to the peripheral face, and is arranged movable approximately at the anterior part of Rota 3.
[0016] The main part 2 of a reel has the case section 10 which supports Rota 3 and spool 4, one pair of lid sections 11a and 11b the screw stop of the attachment and detachment of was made free to the both-sides side of the case section 10, and the beam attachment section 12 prolonged in the upper part from the case section 10. The case section 10 is the member of the thin meat made from an aluminium alloy, and has Openings 10a and 10b on both sides. The Rota drive 5 for rotating Rota 3 and the level wind system 6 for moving spool 4 approximately and rolling round a fishing line to homogeneity are formed in the interior of the case section 10.
[0017] The lid sections 11a and 11b are the members of the thin meat made from an aluminium alloy, and cover each for the openings 10a and 10b of the case section 10. The tubed handle supporter 8 which projects in the side which supports the handle shaft 7 with which the handle 1 was fixed at the tip is formed in one lid section 11a (under drawing 3). Bearing 9 and 9 is arranged in the both ends of the handle supporter 8, and the handle shaft 7 is supported by the handle supporter 8 free [rotation] by bearing 9 and 9.
[0018] The beam attachment section 12 is a member prolonged ahead [slanting] in the upper part from the case section 10, and is formed in the about T character mold by the case section 10 and one. Beam clamp-face 12a is formed in the upper part of the beam attachment section 12. The Rota drive 5 has the master gear 13 formed in the end face of the handle shaft 7 by the handle shaft 7 and one, and the pinion gear 14 which meshes with master gear 13. The pinion gear 14 is formed in tubed, and the anterior part 14a penetrated the core of Rota 3, and is prolonged in the spool 4 side. And the screw section is formed at the tip. As for the pinion gear 14, the pars intermedia and the back end section of the shaft orientations are supported by the case section 10 of the main part 2 of a reel free [rotation] through bearing 15 and 16, respectively.
[0019] A level wind system 6 is a device for making a cross direction carry out both-way migration of the spool shaft 20 which fixed the core of spool 4 at the tip, and moving spool 4 in this direction. The level wind system 6 has **** 21 arranged above the spool shaft 20, the slider 22 which moves to a cross direction along with **** 21, and the middle gear 23 fixed at the tip of **** 21. **** 21 is arranged in parallel with the spool shaft 20, and the point is supported by the case section 10 free [rotation] inside Rota 3. Moreover, spiral slot 21a is formed in the periphery section of **** 21, and flat part 20a is formed in the back end. The back end of the spool shaft 20 is being fixed to the slider 22 by shaft-orientations migration impossible and rotation impossible. A slider 22 is guided at shaft orientations with the guide shafts 24a and 24b with which **** 21 has been arranged the upper part and caudad in parallel. It is fixed to the point of **** 21 and the middle gear 23 meshes with the pinion gear 14.
[0020] [Configuration of Rota] Rota 3 has the body 30, and the 1st Rota arm 31 and the 2nd Rota arm 32 which countered the side of a body 30 mutually and was prepared in it, as shown in drawing 1 and drawing 4 . A body 30 and both the Rota arms 31 and 32 are really fabricated. The front wall 33 is formed in the anterior part of a body 30, and boss 33a is formed in the center section of the front wall 33. Anterior part 14a of the pinion gear 14 and the spool shaft 20 have

penetrated the through tube of this boss 33a. The nut 34 is arranged at the front side of a front wall 33, and this nut 34 is screwing in the screw section at the tip of the pinion gear 14. The bearing 35 for supporting a nut 34 free [rotation] to the spool shaft 20 is arranged at the inner circumference section of a nut 34.

[0021] Moreover, inside the body 30, the inversion prevention device 37 of Rota 3 is arranged. The inversion prevention device 37 has the one-way clutch (not shown) of a roller mold, and the manipulator style 38 which switches an one-way clutch to an operating state and a non-operating state. An outer ring of spiral wound gasket is fixed to the case section 10, and, as for the one-way clutch, the inner ring of spiral wound gasket is being fixed to the pinion gear 14. The manipulator style 38 has the control lever 39 arranged at the lower part of the case section 10, an one-way clutch cuts and replaces it with two conditions by making a control lever 39 rock, at the time of an operating state, Rota 3 becomes inversion impossible and the inversion of Rota 3 is attained at the time of a non-operating state.

[0022] The tubed ****** prevention member 36 which has a opening is formed ahead at the front wall 33 of Rota 3. This ****** prevention member 36 has step 36a in the periphery point, and in order that the fishing line twisted around the spool 4 may prevent biting close on the spool shaft 20 from the crevice between Rota 3, it is prepared. As shown in drawing 1 - drawing 3 , the inner circumference side at the tip of the 1st and 2nd Rota arms 31 and 32 is equipped with the 1st and 2nd bail supporter material 40 and 41 respectively free [rocking]. The 1st bail supporter material 40 is supported by the 1st Rota arm 31 free [rotation] by two bearing 40a. In order to show a fishing line to spool 4, it is equipped with the fishing line guidance device 42 at the tip of the 1st and 2nd bail supporter material 40 and 41. It is possible to also make it function as a balancer for canceling the imbalance at the time of the rotation which constitutes the 2nd bail supporter material 41 from the quality of the material with larger specific gravity than other portions, and originates in the 1st bail supporter material 40 and the fishing line guidance device 42 here.

[0023] Moreover, the radius of gyration of the fishing line guidance device 45 becomes small, and it is hard coming to hit a hand also with a fishing rod by equipping the inner circumference side of the Rota arms 31 and 32 with each bail supporter material 40 and 41. Therefore, the beam attachment section 12 can be shortened, spool 4 and a fishing rod can be brought close, and a miniaturization becomes possible as a whole. Here, both the bails supporter material 40 and 41 can be freely rocked centering on one rocking shaft M. And when the point that the rocking shaft M and the 1st bail supporter material clamp face of the 1st Rota arm 31 cross is made into the center of oscillation C1 and the point that the rocking shaft M and the 2nd bail supporter material clamp face of the 2nd Rota arm 32 cross is made into the center of oscillation C2, the center of oscillation C2 is ahead located from the center of oscillation C1. That is, the rocking shaft M leans back to the shaft which intersects perpendicularly with the spool shaft 20. Moreover, each bail supporter material 40 and 41 is arranged so that those rocking sides may intersect perpendicularly to the rocking shaft M.

[0024] [Structure of a fishing line guidance device] Drawing 2 , drawing 3 , and drawing 5 explain the fishing line guidance device 42 to details more below. The fishing line guidance device 42 has the fixed shaft 43 with which the end was fixed to the 1st bail supporter material 40, the fixed shaft 43, the fixed shaft guard 44 formed by one, the outline tubed Rhine roller 45, and the bail 46. Both ends are fixed to the 2nd bail supporter material 41 and the fixed shaft guard 44, and a bail 46 curves to the method of the outside of a hoop direction of spool 4, is arranged, and leads a fishing line to the Rhine roller 45 through the fixed shaft guard 44. Here, the fixed shaft guard and the bail 46 are constituted so that the distance R of fishing line guidance side contact section 46b (drawing 1) of Rhine roller flank part 46a (drawing 2) of the fixed shaft guard 44 and a bail 46 and the fishing line contact section on spool 4 may become short as it faces to the Rhine roller 45 from a bail 46.

[0025] The fixed shaft 43 is the member manufactured by cutting by the fixed shaft guard 44 and one, as shown in drawing 5 . The end face is prolonged from the fixed shaft guard 44, and the fixed shaft 43 is being fixed to the fishing line induction member 47 by which the tip was formed at the tip of the 1st bail supporter material 40 with the fixed screw 56. This fishing line induction

member 47 is projected at the tip of the 1st bail supporter material 40 in the shape of the cylinder board, and is really formed in it. Moreover, the fixed shaft 45 is positioned to a hand of cut, and is inserted in the fishing line induction member 47 so that the top-most vertices of the fixed shaft guard 44 may turn to a predetermined direction.

[0026] Top-most vertices are the approximate circle drill configurations [center] shifted, and the top-most-vertices 44a is the back of a reel on the basis of the axis of the fixed shaft 43, and the fixed shaft guard 44 has turned to the method of the outside of the direction of a path of spool 4. ****** by which a bail 46 is smoothly joined to ridgeline section 44b by ridgeline section 44b near [this] cone-point 44a. The joint of this bail 46 and the fixed shaft guard 44 is deflected from cone-point 44a to the fishing line guidance side. Moreover, 44d of indented deficit sections is formed in ridgeline section 44c by the side of the tension-thread-guard section of the fixed shaft guard 44, and reverse. Furthermore, the reduction rate of the distance R with the fishing line contact section of the spool 4 of a portion which results from near the joint of a bail 46 and the fixed shaft guard 44 to the Rhine roller 45 (drawing 2) is larger than the reduction rate till then.

[0027] The Rhine roller 45 is supported by the fixed shaft 43 free [rotation] through bearing 48. Bearing 48 is inserted in the fixed shaft 43 between the fishing line induction member 47 and the fixed shaft guard 44. The end of inner-ring-of-spiral-wound-gasket 48a of bearing 48 contacted the fishing line induction member 47, and the other end is in contact with the spacer 49 arranged between the fixed shaft guards 44. Thereby, inner-ring-of-spiral-wound-gasket 48a is positioned by shaft orientations.

[0028] Moreover, the Rhine roller 45 is inserted in in the direction of a fixed shaft guard at migration impossible at outer-ring-of-spiral-wound-gasket 48b of antifriction bearing 48, and circumferential groove 45a which shows a fishing line to spool 4 and which is the interior of a proposal is formed in the peripheral face. The Rhine roller 45 has stop section 45b which projects in the method of inside so that it may stop to the end face by the side of the fishing line induction member 47 of outer-ring-of-spiral-wound-gasket 48b of bearing 48 in inner skin. Thereby, the Rhine roller 45 is migration impossible in the fixed shaft-guard 44 direction, and few crevices are always formed between the fixed shaft guards 44.

[0029] Between the end face by the side of the fishing line induction member 47 of the Rhine roller 45, and the fishing line induction member 47, the thrust pad ring 50 made of synthetic resin, such as Duracon, is arranged. The thrust pad ring 50 has prevented that the Rhine roller 45 contacts the fishing line induction member 47 and directly.

[Configuration of a spool] The spool 4 is arranged between the 1st Rota arm 31 of Rota 3, and the 2nd Rota arm 32, and is being fixed at the tip of the spool shaft 20. Spool 4 has flange 4b and before [the major diameter fixed to the anterior part of bobbin drum section 4a] flange 4c, after being formed in the posterior part of tapering taper tubed bobbin drum section 4a by which a fishing line is twisted around a periphery, and bobbin drum section 4a by one from it at a major diameter. These each part is lightweight metal, such as an aluminium alloy, and is formed with the thin thickness of about 1.2-1.5mm.

[0030] The disc-like front wall section 51 is formed in the point of bobbin drum section 4a by one, and the boss section 52 fixed to the spool shaft 20 by the pin 53 is formed in the core. Bobbin drum section 4a is prolonged in the periphery side of the body 30 of Rota 3, and drum length is long from the usual spinning reel. Moreover, the flange height of both the flanges 4b and 4c is lower than the usual spinning reel. Thereby, the resistance at the time of thread emission decreases, and even if it twists a thin fishing line around bobbin drum section 4a, the fishing line has stopped being able to get twisted easily.

[0031] The ring-like slot 54 is formed in the inner circumference section at after flange 4b. The vibration-deadening ring 55 is inserted in the slot 54. The vibration-deadening ring 55 is a ring made of synthetic resin which has elasticity, such as Duracon, and as shown in drawing 6 , it is the configuration which a part of circle cut and lacked. The outer diameter D1 (drawing 6) of this vibration-deadening ring 55 is larger than the bore D2 (drawing 4) of a slot 54. For this reason, in case the vibration-deadening ring 55 is inserted in a slot 54, slightly, the force is put in, the both ends of the notch of the vibration-deadening ring 55 are held, and as that path is

contracted smaller than the bore D3 of the edge of a slot 54, it is inserted in. By this, a slot 54 will be equipped with the vibration-deadening ring 55 using the elasticity of synthetic resin.
[0032] If the spool 4 of thin meat is equipped with such a vibration-deadening ring 55 made of synthetic resin, when rolling round a fishing line, even if a fishing line is in charge of spool 4, vibration by contact will be suppressed with the vibration-deadening ring 55, and spool 4 will stop being able to vibrate easily. For this reason, in case a fishing line is rolled round by the metal spool 4, even if it contacts spool 4, it is hard coming to generate noise like the sound of a bell.
[0033] Moreover, since the inner skin of spool 4 is equipped with the vibration-deadening ring 55, the vibration-deadening ring 55 does not become the obstacle of thread winding, but it can suppress enlargement of the whole spool. Moreover, since the vibration-deadening ring 55 is a product made of synthetic resin, while being able to suppress vibration of the metal spool 4 more with the synthetic resin which cannot vibrate easily, the weight increase by adding the vibration-deadening ring 55 can be stopped low.
[0034] Furthermore, since synthetic resin has elasticity and the spool 4 is equipped with the vibration-deadening ring 55 using the elasticity of synthetic resin, while the attachment member for attaching the vibration-deadening ring 55 becomes unnecessary and attachment of the vibration-deadening ring 55 becomes easy, vibration can be more positively suppressed by energizing spool 4 with elasticity. Moreover, since it is formed in bobbin drum section 4a and one, and is vacant inside in a major diameter from it and the inner skin of flange 4b is equipped the back with much space, even if the vibration-deadening ring 55 equips with the vibration-deadening ring 55, spool 4 does not enlarge it.
[0035] [Actuation of a reel and actuation] In this spinning reel, a bail 46 is moved to a thread disconnection position from a thread winding side at the time of casting. Thereby, the 1st and 2nd bail supporter material 40 and 41 rotates in this direction centering on the rocking shaft M. Since the 1st and 2nd bail supporter material 40 and 41 has been arranged at the inner circumference side of the 1st and 2nd Rota arms 31 and 32 at this time and the rocking shaft M leans back to the spool shaft 20, the 1st bail supporter material 40 and the Rhine roller 45 at that tip move to an inner circumference side further rather than the location at the time of a thread winding posture. For this reason, the fishing line which it let out at the time of casting stops easily being involved in the 1st bail supporter material 40 or the Rhine roller 45.
[0036] A bail 43 is pushed down on a thread winding posture at the time of fishing line winding. if this rotates a handle 1 in the thread winding direction, it will be automatically performed by work of the cam and spring which are not a drawing example. If a handle 1 is rotated in the thread winding direction, this turning effort will be transmitted to the pinion gear 14 through the handle shaft 12 and master gear 13. The turning effort transmitted to this pinion gear 14 is transmitted to Rota 3 through pinion gear 14 anterior part, and Rota 3 rotates it in the thread winding direction.
[0037] Moreover, if a bail 43 falls on a thread winding posture and Rota 3 rotates, the fishing line in contact with the posterior part (fishing line guidance side contact section) of a bail 46 will be guided with a bail 46 at the fixed shaft guard 44. The fishing line guided at the fixed shaft guard 44 is guided at the Rhine roller 45, and further, the direction of a fishing line is changed with the Rhine roller 45, and it is rolled round by spool 4 periphery.
[0038] Since the bail 46 and the fixed shaft guard 44 are constituted so that it may become short as the distance R of this fixed shaft guard 44 and the fishing line guidance side contact section of Rhine roller flank part 46a of a bail 46, and the fishing line contact section on spool 4 faces to the Rhine roller 45 from a bail 46, the increase and decrease of fluctuation of distance with spool 4 are lost, and a fishing line stops being caught easily. For this reason, it can show smoothly a fishing line to the Rhine roller 45 from a bail 46.
[0039] Moreover, the fixed shaft guard 44 is a cone configuration, since the end of a bail 46 is smoothly joined to ridgeline section 44b near cone-point 44a with the ridgeline section, can hide convex top-most-vertices 44a in which a fishing line tends to be caught with a bail 46, and can avoid it. For this reason, a fishing line is guided more smoothly at the Rhine roller 45. Moreover, since cone-point 44a is the back of a reel and has turned to the method of the outside of the

direction of a path of spool 4 on the basis of the axis of the fixed shaft 43, it can realize easily the configuration which shortens distance with spool 4 in the fixed shaft guard 44.
[0040] Moreover, since the joint of a bail 46 and the fixed shaft guard 44 is deflected from cone-point 44a to the fishing line guidance side, it is lost that top-most-vertices 44a projects of it, and it is more smoothly shown to a fishing line to it at a tension-thread-guard side. Moreover, since 44d of deficit sections dented in ridgeline section 44c by the side of the tension-thread-guard section of the fixed shaft guard 44 and reverse is formed, it becomes possible only for the part of 44d of deficit sections to be able to attain lightweight-ization, and to maintain the balance of Rota 3 the optimal with the magnitude of 44d of deficit sections.
[0041] Moreover, a reduction rate becomes large there, and since it is larger than the reduction rate of the bail till then, even if the reduction rate of the distance R with the spool 4 of a portion which results from near the joint of a bail 46 and the fixed shaft guard 44 to the Rhine roller 45 is in the joint of a bail 46 and the fixed shaft guard 44 about a delicate level difference, with vigor, a fishing line jumps over the joint and it is smoothly shown to it to it at the Rhine roller 45.

[0042] Furthermore, since the fixed shaft guard 44 and the fixed shaft 43 are manufactured by cutting by one, the number of erectors and processing man day of components decrease, and a manufacturing cost can be reduced. On the other hand, by the middle gear 23 which meshes with the pinion gear 14, **** 21 rotates, and the slider 22 which gears to spiral slot 21a of this **** 21 is guided at the guide shafts 24a and 24b, and moves to a cross direction. For this reason, the fishing line to which the spool shaft 20 and the spool 4 carried out both-way migration at the cross direction, and it was shown to them according to the fishing line guidance device 42 at the spool 4 is rolled round by the peripheral face of bobbin drum section 4a of spool 4 at abbreviation homogeneity at a cross direction.
[0043] In the case of the above-mentioned actuation, the fishing line included in circumferential groove 45a of the Rhine roller 45 is energized at the fixed shaft-guard 44 side, and the Rhine roller 45 is energized by the reaction at the fixed shaft-guard 44 side. However, since the inner skin of the Rhine roller 45 is migration impossible in the fixed shaft-guard 44 direction by stop section 45b, even if the Rhine roller 45 is energized at the fixed shaft-guard 44 side, the Rhine roller 45 cannot contact the fixed shaft guard 44 easily.
[0044] Operation gestalt] besides [
(a) The configuration and configuration of a fixed shaft and a fixed shaft guard are not limited to said operation gestalt. For example, another object is sufficient as a fixed shaft and a fixed shaft guard, and a fixed shaft guard may be not a cone form but campanulate.
(b) The format of a spinning reel is not limited to said operation gestalt, and can apply this invention also to what has a drag device, and the spinning reel which has the Rota brake mechanism.
[0045]
[Effect of the Invention] Since according to this invention it is short as the distance of a fixed shaft guard and the fishing line guidance side contact section for the Rhine roller flank of a bail, and the fishing line contact section on a spool faces to the Rhine roller from a bail during migration of the fishing line from a bail to a fixed shaft guard, the increase and decrease of fluctuation of distance with a spool are lost, and a fishing line stops being caught easily. For this reason, it can show smoothly a fishing line to the Rhine roller from a bail.

[Translation done.]

* NOTICES *

1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1] The cross-section side elevation of the spinning reel which adopted 1 operation gestalt of this invention.
[Drawing 2] The front view
[Drawing 3] The plane cross section.
[Drawing 4] A spool and the cross-section enlarged view of Rota.
[Drawing 5] The elevation partly in section of a fishing line guidance device.
[Drawing 6] Front view of a vibration-deadening ring.
[Description of Notations]
1 Handle
2 Main Part of Reel
3 Rota
4 Spool
31 32 The 1st and 2nd Rota arm
40 41 Bail supporter material
42 Fishing Line Guidance Device
43 Fixed Shaft
44 Fixed Shaft Guard
44a Top-most vertices
44b, 44c Ridgeline section
44d Deficit section
45 Rhine Roller
46 Bail
46a A part for the Rhine roller flank
46b Fishing line guidance side contact section

[Translation done.]